

USSN 09/769,405
Art unit 3679
Examiner J.R. Schiffman

Drawing

The enclosed figure makes the changes suggested on the notice of draftperson's patent drawing review. Please approve the formal drawing.

The Rejection

In the Office Action May 17, 2002, Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Silva (US 4168393). Claims 4 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silva (US 4168393). Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silva (US 4168393) in view of Edge (US 272033). Applicant respectfully traverses the rejections.

Silva is cited by the Examiner as teaching a rod coupling comprising a tubular housing having a first box end and a second box end, the tubular housing having an interior surface defining a bore extending along the tubular housing from the first box end to the second box end, the tubular housing having an exterior surface, plural openings extending transversely through the housing from the interior surface to the exterior surface, and a coating on the exterior surface of the tubular housing and covering the plural openings. Based on this erroneous interpretation of Silva, the Examiner has concluded that all of the claims stand rejected based on either anticipation or obviousness.

Applicant respectfully traverses this conclusion as based on faulty premises and reasoning.

First of all, regarding the rejection under 35 USC 102, as noted in *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

Silva's invention is, first and most importantly, not a rod coupling, and second, does not teach, as claimed in amended claim 1 of Applicant's invention, ends adapted for threaded connection to a rod in a downhole rod string. There is nothing

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inherently or explicitly taught in Silva that refers to an electrical connector composite housing having thread ends, either male or female, let alone a rod coupling having the claimed features. Rather, Silva repeatedly refers to a "sleeve-like insert" (Col. 1, line 55; Col. 2, lines 3-4, 46-47; Claims 1 and 6); which is a manner of attachment markedly different from corresponding threaded ends. This is sufficient to overcome the rejection of claim 1 based on 35 U.S.C. 102, and because claims 2, 5 and 6 are all dependent on claim 1, any rejection based on 35 U.S.C. 102 is overcome for them as well.

As for the rejection of claims 3, 4, and 7-12 under 35 U.S.C. 103(a) as being unpatentable over Silva (or Silva in view of Edge [272033]), Applicant respectfully submits that Silva is so completely different from Applicant's invention as to be irrelevant. Silva is directed to a completely different problem than the Applicant's invention, and cannot be considered analogous.

Silva identifies as a primary object of the invention "to provide a sleeve-like folded insert of conductive elastomeric material, of a type for use within electrical connectors, having an enfolded portion substantially permanently retained in its intended position... without the use of adhesives or mechanical fasteners" (Col. 1, lines 49-53, 64-65). "The resulting joinder of enfolded portion 46 to insert 12 is of suitable strength so as to prevent the enfolded portions from moving or becoming free during any subsequent phase of development ... as well as during any phase of actual operation or use of a connector embodying the composite housing 10" (Col. 5, lines 28-34). Silva does not teach or suggest any problem of adhesion between the conductive insert and the outer insulative layer, nor any problem related to having the outer insulative layer come free during subsequent manipulations.

Applicant's invention is directed to a different problem, has a different structure, and serves a different function. Applicant submits that no one skilled in the art of downhole drilling would turn to high voltage power distribution systems to solve the problem as outlined by the Applicant. Applicant teaches an improved rod coupling, the coating of which will both facilitate movement of the rod string downhole while being less likely to come free from the rod coupling.

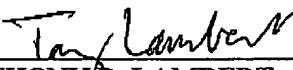
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For all of the foregoing reasons, applicant respectfully submits that the rejection of Claims 1 through 12 was improper and should be withdrawn.

Reconsideration and withdrawal of the rejections, and allowance of the application, is respectfully requested.

Respectfully submitted, signed and certified as being faxed to the USPTO (6 numbered pages plus pages 2 and 3 and Figure page) on:

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(Date)


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Appendix Showing Claim Amendments

1. A rod coupling, comprising:

a tubular housing having a first [box] end adapted for threaded connection to a rod in a downhole rod string and a second [box] end adapted for threaded connection to a rod in a downhole rod string, the tubular housing having an interior surface defining a bore extending along the tubular housing from the first [box] end to the second [box] end, the tubular housing having an exterior surface;

plural openings extending transversely through the housing from the interior surface to the exterior surface; and

a coating on the exterior surface of the tubular housing and covering the plural openings.

7. A rod string formed of plural rods connected by plural rod couplings, each rod coupling comprising:

a tubular housing having a first [box] end adapted for threaded connection to a rod in a downhole rod string and a second [box] end adapted for threaded connection to a rod in a downhole rod string, the tubular housing having an interior surface defining a bore extending along the tubular housing from the first [box] end to the second [box] end, the tubular housing having an exterior surface;

plural openings extending transversely through the housing from the interior surface to the exterior surface; and

a coating on the exterior surface of the tubular housing and covering the plural openings.

bore extending along the tubular housing from the first box end to the second box end, and has an exterior surface. Plural openings extend transversely through the housing from the interior surface to the exterior surface. A coating on the exterior surface of the tubular housing covers the plural openings, and may fill the openings or extend through the openings to form knobs inside the tubular housing. The coatings may taper from the exterior surface towards the interior surface. The openings are preferably distributed uniformly around the tubular housing. The openings are preferably distributed in plural rows. A rod string may be made up of plural such rod couplings and connecting rods.

These and other aspects of the invention are described in the detailed description of the invention and claimed in the claims that follow.

BRIEF DESCRIPTION OF THE DRAWINGS

There will now be described preferred embodiments of the invention, with reference to the drawings, by way of illustration only and not with the intention of limiting the scope of the invention, in which like numerals denote like elements and in which the sole figure shows a rod coupling in a rod string according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word in the sentence are included and that items not specifically mentioned are not excluded. The use of the indefinite article "a" in the claims before an element means that one of the elements is specified, but does not specifically exclude others of the elements being present, unless, unless the context clearly requires that there be one and only one of the elements.

Referring to the figure, there is shown a rod coupling 10 formed of a tubular housing 12 having a first box end 14 and a second box end 16. Each box end 14, 16 is threaded for receiving a corresponding pin 18, 20 of respective sucker rods 22, 24. Boxes and pins of sucker rods are well known in the art. The tubular housing 12 has an interior surface 26 defining a bore 28 extending along the tubular housing 12 from the

first box end 14 to the second box end 16. The tubular housing 12 also has an exterior surface 30. Plural openings 32 extend transversely through the tubular housing 12 from the interior surface 26 to the exterior surface 30. The openings 32 may be provided in plural rows and are preferably distributed uniformly around the housing 12, for example at 120° spacing. The openings 32 should not be so numerous as to weaken the rod coupling 10 unduly. The rods 22, 24 and tubular housing 12 are made of conventional materials for the intended purpose.

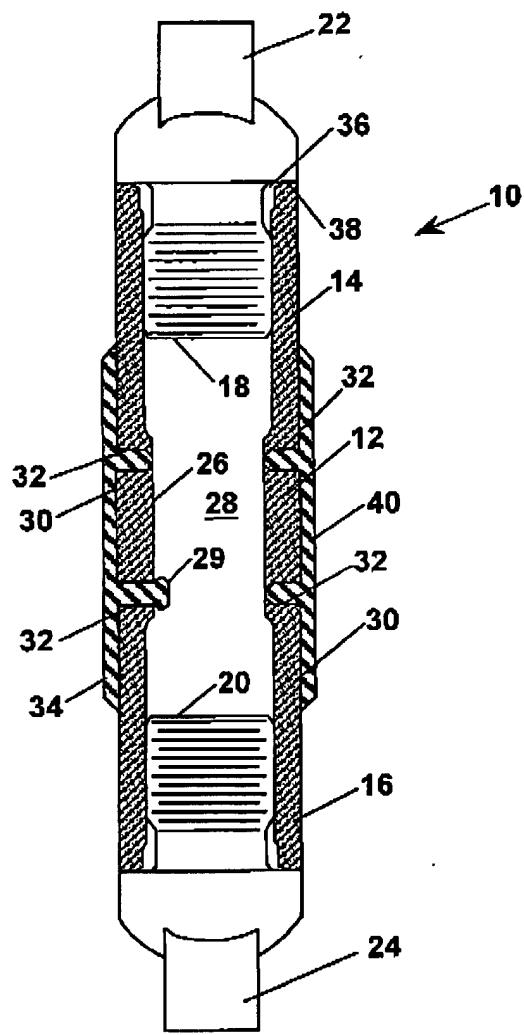
A coating 34 is provided on the exterior surface 30 of the tubular housing 12. The coating 34 covers and may partially occupy or fill the plural openings 32. The coating 34 may be made of any conventional material used for coating a rod coupling, such as urethane, rubber or other elastomers. The coating 34 may be hot applied or adhered to the exterior surface 30, which is preferably knurled to promote adhesion.

The openings 32 may taper from the exterior surface 30 towards the interior surface 26 for example in a stepped pattern, in which the diameter of the openings 32 is significantly reduced adjacent the interior surface 26. This helps prevent coating material from extruding into the bore 28 of the tubular housing 12 if that is desired.

The openings may also be straight through (without a step) or even threaded to promote good adhesion of the coating to the coupling. The coating may also be allowed to extrude into the bore to form a knob as shown at 29 that is larger than the hole and prevent the coating from pulling out.

The tubular housing 12 is made by preparing a tubular housing in conventional manner, except the openings are bored through the tubular housing before the coating is applied.

In operation, the tubing string is made up by threading rods such as rods 22, 24 into the box ends of the rod coupling 12. The threads of the rods are typically lubricated and in addition a metal seal is typically made between a shoulder 36 on the rods 22, 24 and an end face 38 on the tubular housing 12. This seals the bore 28. When the rod string thus made is placed downhole, differential pressure between the exterior 40 of the coating 34 and the bore 28 helps to hold the coating on the rod coupling.



FIGURE